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SOCIETIES

THE NEW YORK BRANCH OF THE AMERICAN
PSYCHOLOGICAL ASSOCIATION

THE New York Branch of the American Psychological Association met in conjunction with the Section of Anthropology of the New York Academy of Sciences on November 25 and on February 24. The following papers were presented at these meetings: *Difference Tones and Consonance*:¹ F. KRUEGER.

The Attempt to Measure Mental Work as a Psycho-Dynamic Process:² RAYMOND DODGE.

The Psychology of the Earthworm: ROBERT M. YERKES.

This is a preliminary report of an investigation, now in progress, the purpose of which is (a) to demonstrate whatever ability the earthworm may have to acquire habits of a certain order; (b) to discover the characteristics of any habits which appear; (c) to enumerate and evaluate the various external and internal influences on habit-formation; (d) to ascertain the degree of permanency of the habits, and (e) to discover their relations to the anterior ganglia (brain).

By means of a T-shaped maze constructed from plate glass, specimens of the manure worm, *Allolobophora fætida*, were tested. The maze was placed with the stem directed toward the light. Across one of the arms a piece of sandpaper was placed and, just beyond it, a pair of electrodes. The other arm was left open so that the worm might escape to an artificial burrow. The worms were driven into the T by light and the chief motive for escape therefrom was the tendency to avoid light. It was the purpose of the test to demonstrate (a) any ability which the manure worm may possess to acquire a direction habit and (b) to associate the tactual experience of contact with sandpaper with the electrical shock which regularly followed the tactual stimulus in case the worm continued to move forward after reaching the sandpaper.

Trials were made in daily series varying in number from 5 to 20. The 5 trial series were found, on the whole, more satisfactory.

Referring now exclusively to the results obtained for a single worm which has been under observation since October, 1911, the following results may be presented: (1) *Allolobophora* is capable of acquiring certain definite modes of reaction. (2) Modifications appear as the result of from 20 to 100 experiences. (3) The behavior is extremely variable because of variations in external conditions and in

¹ See "Consonance and Dissonance," this JOURNAL, Volume X., page 158.

² See *Psychological Review*, January, 1913.

the condition of the worm itself. (4) There is a tendency to follow the mucous path through the apparatus, but this is not sufficiently strong or constant to yield perfect results. (5) The following are the chief modifications which have been noted: (a) increased readiness to enter the apparatus and to desert it for the artificial burrow; (b) apparent "recognition" of the artificial burrow which is used as "exit tube"; (c) a gradual increase in the number of avoidances of the sandpaper and of contact with the electrodes as a result of the "warning" influence of the sandpaper; (d) the disappearance of the early tendency to retrace the path through the stem of the T; (e) the similar disappearance of the tendency to turn back after progressing well toward the exit tube. (6) The correct performance of a thoroughly ingrained habitual act, of the kind studied in this investigation, is not dependent upon the "brain" (portions of the nervous system carried by the five anterior segments), since the worm reacts appropriately within a few hours after its removal. (7) As the brain regenerates, the worm exhibits increased initiative, its behavior becomes less automatic, more variable. (8) Within four weeks after the operation the regenerated segments appear superficially complete and the worm naturally burrows in a mixture of earth and manure. (9) Two months after the removal of the "brain," during the last four weeks of which period no training was given, the habit had completely disappeared from worm No. 2, the subject to whose responses this paper is devoted, and in its place there appeared a tendency to turn in the opposite direction to that demanded in the training. (10) Systematic training for two weeks resulted in the partial reacquisition of the original direction-habit.

The general results which have just been stated are subject to modification in the light of additional data. To the experimenter it seems that the particular individual which has been longest under observation is in many respects exceptional. It is perfectly clear, however, from results obtained with other individuals that important modifications in behavior appear as the result of training. It is equally certain that direction-habits are not readily acquired.

*Psychology as the Behaviorist Views It:*³ JOHN B. WATSON.

Methods of Orientation and Imaginary Maps: C. C. TROWBRIDGE.

The author classified the methods of orientation under two heads. The first was called the *domi-centric method*, used by all living creatures except man in a civilized state. In this case the manner of moving about the surface of the earth relates to a point, usually the home. In the second type, which was called the *ego-centric method*, or cardinal point method, the use is made of the cardinal

³ See *Psychological Review*, March, 1913.

points of the compass to give orientation, and those points do not necessarily relate to any particular center or home. It is believed that those creatures using a *domi-centric* method have an advantage over civilized man in finding their way home. There may be readily a combination of the two methods in special cases.

In the second part of the paper it was shown that a very large percentage of people, amounting to the order of 50 per cent., are accustomed to *think* of far distant places in an entirely different direction than they really are, amounting to from 45° to 180° from the real direction. The subjects tested *knew* the correct direction within a few degrees. Statistics seem to indicate that individuals having these "imaginary maps" were more apt to be confused with respect to direction than those not having them.

The Probable Explanation of Certain Flock Formations of Birds:

C. C. TROWBRIDGE.

This paper also consisted of two parts, and in the first the author showed that birds in a large flock when migrating, in all probability, average their errors with respect to a certain distant destination, and if this is the case the explanation of the migration in large flocks of many species of birds can be explained, also; the principle would prevent single birds from going astray.

The second part of the paper related to the Echelon formation of flight of many large birds when flying in flocks; the explanation given being that it is the most protective arrangement. Evidence was brought forward to show that in this formation the birds in the flock can see forward as well as to the side, these regions are the chief "danger zones" that the flying flock is subjected to. The paper was illustrated by diagrams, and by photographs of blue geese taken by Mr. Herbert K. Job at Marsh Island, on the Mississippi delta.

A Note on the Retention of Practise: F. LYMAN WELLS.

One subject was highly practised in the tapping test 5½ years ago. Six other subjects were highly practised in addition and number-checking tests nearly 3 years ago. The present experiments were made to ascertain the amount and character of the loss during the relative disuse of the functions. In all tests the loss found was about half the percentile amount gained by practise. The renewal of practise does not bring with it an especially rapid practise gain. Persons who gain much in the addition test regularly tend to lose much in it, but this is not true in the number-checking test. Persons who lose much in the one test, however, tend also to lose much in the other, although the amounts of practise gain in them are negatively related.

A Comparative Study of the Illusions and Hallucinations of Dementia Præcox and Manic Depressive Insanity: DARWIN OLIVER LYON.

The various conceptions of the terms *hallucination* and *illusion* were taken up in detail and it was shown that, although no sharp line of demarcation could be drawn between the two terms, yet the distinction was sufficiently fine to warrant their separation in an experiment such as the one under consideration. An hallucination was defined as a subjective sensory image arising without the aid of external stimuli, or, in short, a perception without an object. Illusions were defined as the false interpretation of external objects; *i. e.*, an illusion is the falsification of a real percept. The speaker admitted that cases might occur in which ideas originating wholly in the cortical center might become so vivid as to be taken for sensations that had arisen by stimulation of the sense organs—but he believed that these cases were much less common than is generally supposed.

It was shown that the various authorities differed greatly as to the frequency of hallucinations and illusions in the various forms of insanity. Each of the various psychoses were considered. In *dementia paralytica*, for example, the elder Falret absolutely denied their existence. Kraft-Ebbing says they are so rare that where they are found one should suspect a false diagnosis. Yet Jung, Saury, and Mickle concur in saying that they occur in over one half of all cases.

The part that the various senses play in the fallacious perceptions of the insane was then considered. Though this depends somewhat on the psychosis, both hallucinations and illusions of *hearing* are much more frequent than those of any of the other senses or even combination of the senses. In one form of mania sight hallucinations were found to be greater in number than auditory hallucinations. Hallucinations of taste are very rare. The speaker considered it doubtful if the so-called gustatory hallucinations occasionally seen in *dementia paralytica* were true hallucinations. His experience led him to believe that they were rather the *result* of delusions, in that when a delusion was being “described” by a patient he naturally made his ideas and feelings “fit” accordingly. Of the 361 cases of *dementia præcox* and *manic depressive insanity* tested, only 4 were found having fallacious perceptions of taste, either alone or in combination.

In some cases the patient informs the physician of his own accord regarding his hallucinations and illusions; in others the information sought for must be obtained by some roundabout method. Care must be taken that reported hallucinations are not really illusions;

for example, when in a noisy ward a patient hears herself being called a witch, it is difficult to decide whether she is experiencing an hallucination or an illusion. When, however, the morbid perception occurs in absolute silence we may feel reasonably certain that the patient experiences an hallucination. It was shown that in those cases in which the patient is suspected of endeavoring to conceal the fact that he experiences hallucinations, considerable work may be necessary before their presence or absence can be definitely determined. Careful observation of the patient when he is unaware that he is being watched is, of course, necessary in many cases. Turning the head in a certain direction to listen, gazing at a certain portion of the wall and speaking to it, stuffing the ears with cloth or paper—these and many other “symptoms” lead us to suspect the existence of hallucinations. Evidence of strong emotion, expressions of hate, fear, etc., though not of themselves evidence of hallucinations, warrant further search. The entire test consisted of the following: (1) An examination of the patient’s “history.” (2) Conversation with the physician and attendants in charge. (3) Various questions and tests varied to suit the case. The question concerning the extent to which we should try to *elicit* hallucinations in an experiment of this nature was taken up in detail.

Tables were then presented showing the results of the tests and conclusions drawn. Of the 173 cases of *dementia præcox* 100, *i. e.*, 58 per cent., had fallacious perceptions; of these, 87 were hallucinations; 8, illusions, and 5 hallucinations and illusions. Of the 188 cases of *manic depressive insanity* 64, *i. e.*, 34 per cent., had fallacious perceptions; of these, only 9 were hallucinations, whereas 51 were illusions. Space does not permit a tabulation of the 18 groups into which the speaker assembled his cases. Suffice it to say that hallucinations and illusions of *hearing* come first—comprising as they do, over one half of all cases. Then come *hearing* combined with *sight*, and then those of *sight* alone. The other senses, either alone or in combination, were but sparsely represented.

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REVIEWS AND ABSTRACTS OF LITERATURE

A Short History of Logic. ROBERT ADAMSON. Edited by W. R. SORLEY. Edinburgh and London: William Blackwood and Sons. 1911. Pp. vii + 266.

The philosophical world is greatly indebted to the editor and publishers of this little book for preserving to us in a convenient form and in its entirety the article written by Professor Adamson for the ninth edition of